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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,905	04/20/2001	Kenichiro Kobayashi	KIK01 P322	1673

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EXAMINER

SUN, XIUQIN

ART UNIT	PAPER NUMBER
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2863

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/838,905

Applicant(s)

KOBAYASHI, KENICHIRO

Examiner

Xiuqin Sun

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. In view of the Appeal Brief filed on 08/04/2003, PROSECUTION IS HEREBY REOPENED. A new ground rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiyoshi (JP07110216, English translation, hereafter referred to as Hiyoshi '216) in view of Newman (U.S. Pat. No. 4824250) and Hiyoshi (JP09049706, English translation, hereafter referred to as Hiyoshi '706).

Hiyoshi '216 teaches a method for measuring the amount which an object to be measured has moved in a plane using a granular speck pattern generated by a reflecting laser beam in non-contact fashion (see Abstract, Fig. 1; sections 0002, 0006 and 0007), comprising steps of: irradiating an object to be measured with a laser beam (sections 0009 and 0012); directly detecting the granular speck pattern generated by the reflecting laser beam by a detector and using the detected speck pattern as an index (Fig. 1; sections 0012, 0015 and 0016); calculating the amount of movement of the object based on the movement of a new granular speck pattern corresponding to the moved position of the object with respect to said index (sections 0018 and 0031); and displaying a result of the calculation as a numerical value of the measured amount of movement (sections 0012 and 0022). Hiyoshi '216 also teaches an apparatus for measuring the amount which an object to be measured has moved in a plane using a granular speck pattern generated by a reflecting laser beam (see Abstract), said apparatus comprising: a laser projector to generate a granular speck pattern corresponding to a rough surface of an object to be measured (Fig. 1; sections 0009, 0012 and 0014); a line sensor to pick up said granular speck pattern used as an index (Fig. 1; sections 0012, 0013 and 0018); an A/D converter coupled to said line sensor to convert an analog signal supplied from said line sensor to a digital signal (sections 0013, 0016 and 0018); a processing unit coupled to the A/D converter to calculate the amount of movement of said object on the basis of movement of the granular speck in said pattern with respect to a change in the pixel interval of said granular speck pattern picked up by said line sensor and represented by said A/D converted signal (sections

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0007, 0016, 0018 and 0022); and a display coupled to said processing unit to display the amount of movement calculated by said processing unit (Fig. 1; sections 0018 and 0023). The teachings of Hiyoshi '216 further include: said line sensor includes a tube and said tube is cylindrical (see Fig. 1); an electrical circuit coupled to said line sensor for calculating the amount of movement of said object on the basis of movement of the granular speck in said pattern with respect to a pixel interval of said granular speck pattern picked up by said line sensor and displaying the amount of movement calculated by said electrical circuit (Fig. 1; sections 0007, 0016, 0018 and 0022 and 0023); and a laser source for generating a granular speck pattern corresponding to a rough surface of an object to be measured (Fig. 1; sections 0009, 0012, 0015 and 0016).

Hiyoshi '216 does not mention that: directly sensing the granular speck pattern without the use of a lens; moving said object toward and/or away from said detector and measuring the amount which said object has moved back and forth; and a light shield position in front of said line sensor.

Newman discloses an apparatus which scans a test object with a laser beam to detect defects in the object, and teaches the means of directly sensing speckle patterns of a moving object without the use of a lens (col. 2, lines 11-21, lines 24-35; col. 6, lines 6-16 and col. 8, lines 47-59).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Newman lensless sensing technique in the Hiyoshi '216 system in order to achieve picking up of the speckle pattern accurately

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without using complex and expensive optical components (Newman, col. 8, lines 3-13 and lines 53-59).

Hiyoshi '706 discloses a method of measuring the movement magnitude of a measured object which carries out longitudinal slide movement to a measuring instrument using a laser beam, and teaches: the steps and means of moving said object toward and/or away from said measuring instrument and measuring the amount which said object has moved back and forth (see the entire English translation of the disclosure). Hiyoshi '706 also teaches: a light shield position in front of said line sensor (see the entire English translation of the disclosure).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Hiyoshi '706 in the Hiyoshi '216 system in order to provide a method and apparatus that can measure the movement of an object toward and away from the detector in non-contacting fashion (Hiyoshi '706, Abstract).

4. Claims 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiyoshi '216 in view of Newman, Hiyoshi '706 and Burke (U. S. Pat. No. 4798469).

Hiyoshi '216, Newman and Hiyoshi '706 teach a method and apparatus that includes the subject matter discussed as applied to claims 1-12 above except that: a collimated light source for generating a granular speck pattern corresponding to the surface of an object to be measured.

Burke discloses a non-contact gage system, and teaches: a collimated light source for generating a granular speck pattern corresponding to the surface of an object to be measured (col. 4, lines 56-65 and col. 11, lines 17-33).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teachings of Burke collimated light source in Hiyoshi '706 system in order to provide a better embodiment of the Hiyoshi '216, Newman and Hiyoshi combination and measure the amount of movement of an object back and forth more accurately (col. 4, lines 56-65).

Response to Arguments

5. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Claims 1-17 are rejected as new art have been found to teach the method and apparatus of direct sensing the speckle pattern without the use of a Fourier-transforming lens and measuring movement of an object toward and away from the detector. For detailed response, please refer to paragraph 1-3 set forth above in this Office Action.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (703)305-3467. The examiner can normally be reached on 7:00am-4:30pm.

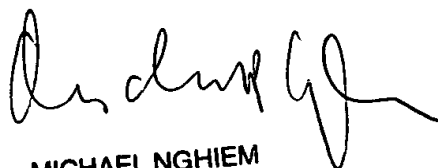
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306.

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October 9, 2003



MICHAEL NGHIEM
PRIMARY EXAMINER